

DISCUSSION OF THE AMENDMENT

Due to the length of the specification herein, Applicants will cite to the paragraph number of the published patent application (PG Pub) of the present application, i.e., US 2007/0181274, when discussing the application description, both in this section and in the Remarks section, *infra*, rather than to page and line of the specification as filed.

Claim 1 has been amended by replacing the term “containing” with the equivalent --comprising--, and by, in effect, moving a comma to an appropriate location. Claim 5 has been amended, consistent with the above-discussed amendment to Claim 1.

Claim 9 has been amended by reciting the method as one for reducing deposits.... In addition, “copolymers” has been replaced with --at least one ... copolymer--, as supported in the specification at paragraph [0007].

New Claims 10-18 have been added. Claim 10 is supported in the specification at paragraph [0006]. Claims 11-18 are analogous to Claims 2 to 8 and 10, respectively, but depend or ultimately depend on Claim 9.

No new matter is believed to have been added by the above amendment. Claims 1-18 are now pending in the application.

REMARKS

The rejection of Claims 1 and 4-9 under 35 U.S.C. § 103(a) as unpatentable over US 5,501,774 (Burke) in view of US 6,797,785 (Hund et al), is respectfully traversed.

As described in the specification at paragraphs [0002]-[0004], homo- and/or copolymers of N-vinylformamide having varying degrees of hydrolysis have been used in the prior art as additives in the production of paper. The specification describes at paragraph [0005] that although the polymers containing vinylamine units and disclosed in the above-discussed prior art are good fixing agents or drainage aids, flocculants and retention aids, problems with deposition in the wire part, press section and drying section of a paper machine still occur in practice when processing paper stocks containing interfering substances, such as coated broke. The paper machine then has to be shut down and cleaned.

The present invention successfully addresses these problems by using a polymer of the type discussed above, wherein the degree of hydrolysis is from 1 to 20 mol%, which polymer is added to a high-consistency paper stock, the high-consistency stock is diluted with water to a low-consistency stock, and the low-consistency stock is drained.

The specification herein contains comparative data demonstrating the significance of the present invention. Three different vinylamine-containing polymers differing in degree of hydrolysis were used, labeled as PVAm 1, PVAm 2 and PVAm 3, as described in the specification at paragraphs [0026]-[0028]. Example 1 is according to the present invention and employs PVAm 3 as the polymer. Comparative Examples 1-3 are otherwise the same as Example 1, except that in place of the PVAm 3, Comparative Example 1 employs a polyaluminum chloride, Comparative Example 2 employs PVAm 1, and Comparative Example 3 employs PVAm 2, as described in the specification at paragraphs [0029]-[0033]. In Example 1, after a run time of one month, the machine was routinely shut down and cleaned but the deposits on the machine were, however, not so serious that it would have

been necessary to shut down the machine, as described in the specification at paragraph [0030]. In Comparative Example 1, the paper production had to be stopped after a machine run time of three days in order to remove troublesome deposits on the wire part, press section and drying section of the machine, as described in the specification at paragraph [0031]. Similar results as in Comparative Example 1 were realized for Comparative Example 2, as described in the specification at paragraph [0032], and for Comparative Example 3, although the run time was four days therein, as described in the specification at paragraph [0033].

The above-applied prior art could not have predicted the above-discussed results.

Burke discloses nothing more than what Applicants have already acknowledged is known. Burke discloses preparing a high-consistency paper stock and then diluting with water to form a low-consistency stock, and adds a cationic coagulating agent to the thick stock. However, Burke does not distinguish from among the various such coagulating agents which may be used, and disclose, for example, polyaluminum chloride as an applicable coagulating agent (column 3, line 62) which, as discussed above for Comparative Example 1, is shown to be inferior. Burke does not disclose the presently-recited polymer. The Examiner thus relies on Hund et al. But Hund et al does not recognize any significance in degree of hydrolysis of their polyvinylamine type polymers. Nor does Hund et al suggest that their polyvinylamine type polymers are any better than, for example, the cationic coagulants of Burke.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1-9 under 35 U.S.C. § 103(a) as unpatentable over US 6,083,348 (Auhorn et al) in view of US 4,444,667 (Burkert et al) as evidenced by US 4,753,710 (Langley et al), is respectfully traversed.

Everything discussed above with regard to the prior art described in the specification, Applicants' improvement, and the comparative data in the specification, is incorporated

herein by reference. Again, the applied prior art in this rejection discloses nothing more than what Applicants have already acknowledged is known in the art. As acknowledged by the Examiner, Auhorn et al does not disclose a degree of hydrolysis of polymers containing vinylamine units. Burkert et al discloses a degree of hydrolysis of 10 to 90%. Thus, the combination of Auhorn et al and Burkert et al, with or without Langley et al, could not have predicted the above-discussed results from the comparative data in the specification.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

The provisional rejection of Claims 1-3, 5-8 and 9 on the ground of nonstatutory obviousness-type double patenting over Claims 1, 5, 6, 8-10 and 12 of copending Application No. 11/719,826 ('826 application) in view of Auhorn et al, is respectfully traversed. The claims of the '826 application are drawn to a process for producing paper, etc. by separately adding a polymer comprising vinylamine units and a polymeric anionic compound to a paper pulp, dewatering and drying. There is nothing in the claims of the '826 application with regard to high-consistency stocks and low-consistency stocks. More significantly, there is nothing in the claims of the '826 application, or in Auhorn et al, regarding the significance of the presently-required limitation of degree of hydrolysis, nor any recognition of the superior results obtained thereby. Accordingly, it is respectfully requested that the rejection be withdrawn.

The provisional rejection of Claims 1-3, 5-6, 8 and 9 on the ground of nonstatutory obviousness-type double patenting over Claims 1, 2 and 6 of copending Application No. 11/574,677 ('677 application) in view of Auhorn et al, is respectfully traversed. The claims of the '677 application are drawn to a process for producing paper, etc. by draining a paper stock on a wire in the presence of at least one polymer as a retention aid, wherein sheet formation is carried out in the absence of finely divided inorganic flocculants and two different types of polymers, one comprising vinylamine units and/or polyvinylformamide.

There is nothing in the claims of the '677 application with regard to high-consistency stocks and low-consistency stocks. More significantly, there is nothing in the claims of the '677 application, or in Auhorn et al, regarding the significance of the presently-required limitation of degree of hydrolysis, nor any recognition of the superior results obtained thereby. Accordingly, it is respectfully requested that the rejection be withdrawn.

The provisional rejection of Claims 1-3, 5, 6, 8 and 9 on the ground of nonstatutory obviousness-type double patenting over Claims 1-5 of copending Application No. 12/065,688 ('688 application) in view of Auhorn et al, is respectfully traversed. The claims of the '688 application are drawn to a process for the production of paper, etc. by draining a paper stock with sheet formation in the presence of a retention aid system comprising three different polymers, one of them being a polymer comprising vinylamine units. There is nothing in the claims of the '688 application with regard to high-consistency stocks and low-consistency stocks. More significantly, there is nothing in the claims of the '688 application, or in Auhorn et al, regarding the significance of the presently-required limitation of degree of hydrolysis, nor any recognition of the superior results obtained thereby. Accordingly, it is respectfully requested that the rejection be withdrawn.

The rejection of Claim 9 under 35 U.S.C. § 101 is respectfully traversed. There is nothing inherently wrong with claiming a method of using. Nevertheless, the rejection would now appear to be moot in view of the above-discussed amendment. Accordingly, it is respectfully requested that the rejection be withdrawn.

The objection to Claim 1 is now moot in view of the above-discussed amendment. Accordingly, it is respectfully requested that the objection be withdrawn.

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All of the presently-pending claims in this application are now believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Customer Number

22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/07)

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Norman F. Oblon



Harris A. Pitlick

Registration No. 38,779